

Keystone Traffic Analysis Update

UPDATED TRAFFIC ANALYSIS

What methodology was used?

Intersections previously analyzed and shown on the maps (10/13 Keystone CAG PowerPoint presentation) were analyzed for the worst-case scenario when a vessel is unloading. Intersections were analyzed in 15-minute increments to ensure that the surge of unloading vessel traffic was represented in the analysis (as impacts represented over the course of an hour). Although it was not clear during the October 13 presentation, the traffic numbers expressed the period of time when the vessel is unloading. In other words, the worst period of each hour represented the condition over the entire hour.

To further explain how the local road system handles traffic surges, a series of figures was developed showing traffic movements at the key intersections and roadway segments in the most impacted conditions after the vessel arrives. Figures T1 through T5 show both background traffic and traffic dispersed from the ferries for existing conditions and for each of the different sizes of vessels under consideration in the year 2030.

The intersection of Main Street and SR 20 was of most interest to the CAG and had the most traffic. The graphic labeled 2030 Summer Peak Arrival, Figure T6, shows the queue and average delay* per vehicle for this intersection in 2030, by vessel type. Figures T1 and T5 show peak traffic during a ferry unload as it approaches the intersection. Figure T6 reflects how the signalized intersection processes the arriving traffic.

It is interesting to note that the queues are not much different depending on the type of vessel. This may seem counterintuitive, but can be explained by the following:

- As vehicles leave the ferry, 39% travel east toward SR 525, and 61% travel north towards Coupeville. This movement distributes the surge in different directions and tends to lessen the impact of larger vessels.

* Average control delay per vehicle (in seconds per vehicle). Control delay includes initial deceleration of vehicle, queue move up time, stopped time, and acceleration delay time.

- With the new terminal, a signal is placed at the egress of the terminal. This will release smaller groups (two or three cycles), spreading the exiting traffic.
- Because the distance from Keystone to Coupeville is more than four miles, there is a lot of time for vehicles to space. Situations that cause spacing include the following:
 - Maintaining proper following distance.
 - Vehicles entering and leaving the road decelerate to leave the roadway, and accelerate to enter the roadway. These movements require other drivers to adjust travel speeds accordingly.
 - Differences in driving behaviors and acceleration ability of vehicles.

Figure T7 is a graphic representation of queue lengths and holding areas for both the current year and 2030, and Figures T8 through T11 show how queue length and holding capacity change over time depending on the size and frequency of the vessels on the route. Figures T8 through T11 have been enhanced from the 10/13 CAG meeting to show the existing holding capacity line (120 vehicles). Figure T7 has been included to show the existing and expanded holding areas. Figure T7 also shows two different queuing options, one for traffic arriving from the east and another for traffic arriving from the west. This graphic shows the location of the 80-car queuing length referenced in the traffic analysis presentation.

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During detailed environmental review, additional traffic analysis will be completed and adverse impacts will be mitigated.

Are the Clinton/Mukilteo or Keystone/Port Townsend Routes Subject to Concurrency?

Concurrency (Chapter 365-195 WAC) is a key provision in Washington State's Growth Management Act (GMA). It is the requirement that certain essential public facilities or services necessary to support growth are in place at the time of new development. Essential facilities or services include, but are not limited to, schools, wastewater treatment, and transportation improvements.

Ferry service provision is one criterion linked to continued growth development on Whidbey Island. In each of the past four years, WSF has officially certified to the Island County Commission that ferry service was expected to meet service standards as set for the Port Townsend/Keystone and Mukilteo/Clinton ferry routes for the following 12-month period.

At the present time, the service standard for Port Townsend/Keystone is set at one “boat-wait,” and Mukilteo/Clinton for two “boat-waits,” as measured on westbound sailings during the PM peak period (3:00 to 7:00 PM) on an average weekday (Tuesday/Wednesday) in an average month (May).

Key Findings

- Because space is created in the traffic stream leaving the vessel by the various means noted above, the signal at SR 20 and Main Street is able to process the traffic so there is relatively little difference in the traffic impacts from the different vessel sizes.
- The Port Townsend/Keystone ferry route is subject to concurrency and currently meets Island County’s service standards.